REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-8 and 10-38 are presently active in this case, Claims 1, 10 and 26 amended, and Claim 9 canceled by way of the present amendment.

In the outstanding Office Action, Claims 1-8, 17-19 and 22-38 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication 2003/0143328 to Chen et al.; Claims 20 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen et al.; and Claims 9-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. in view of U.S. Patent No. 4,713,662 to Wiegand.

First, Applicants wish to thank Examiner Turocy for the March 14, 2007 personal interview at which time the outstanding issues in this case were discussed. During the interview, Applicants presented amendments and arguments substantially as indicated in this response. Agreement was reached that if dependent Claim 9 is incorporated into the independent claims and the arguments contained herein are persuasive, the Examiner will enter the Amendment after Final.

In order to expedite issuance of a patent in this case, Applicants have amended Claim 1 to clarify the patentable distinctions over the prior art of record. Specifically, Applicants' Claim 1, as amended recites an atomic layer deposition system including a process chamber, a substrate holder provided within the process chamber and configured to support a substrate, and an oscillator coupled to the substrate holder, the oscillator producing an RF signal. Also recited is a gas injection system configured to supply a first precursor and a second precursor to the process chamber, and a controller configured to control the gas injection system to continuously flow with the first precursor to the process chamber and to pulse the second precursor to the process chamber at a first time. The controller is also configured to pulse RF

power from the oscillator to the substrate holder at a second time in order to sequentially deposit at least one monolayer on the substrate.

Thus, as discussed in the March 14 personal interview, Claim 1 is now amended to recite an oscillator coupled to the substrate holder and producing an RF signal, which was previously recited in dependent Claim 9. As also discussed in the personal interview, since Claim 9 was considered in the previous Office Action, incorporating this claim within Claim 1 should not be refused entry, even though dependent claims such as Claims 2-8, for example, will now depend from amended Claim 1.

The cited reference to Chen et al. discloses a plasma enhanced deposition system wherein the plasma is created adjacent to a processing region where a substrate is processed. As seen in Figure 2 of Chen et al., the apparatus includes a top shower plate 160 and a bottom shower plate 170, and an RF power source 190 applies RF power to the top and/or bottom shower plate in order to generate a plasma between the shower plates. The plasma then diffuses into the processing region above the substrate holder. Paragraph [0042] of Chen et al. also mentions that a substrate support 112 can be powered or grounded to provide a plasma between the bottom shower plate 170 and the substrate support 112. However, there is nothing in Chen et al. to teach or suggest that a controller is configured to pulse RF power to the substrate holder at a second time in order to sequentially deposit at least one monolayer on a substrate.

The outstanding Office Action responds to this argument as follows:

> "It appears as though the applicant is narrowly interpreting the claim to require the RF power supply to be physically connected to the substrate holder, however, such is not required by the claim. The claim only requires the controller to pulse an RF power to the substrate holder, which is taught by Chen, where the pulsed power is supplied to the showerhead and the pulses will at least partially travel to the grounded substrate, see for example figure 2. Therefore, at the very least, the controller is configured to pulsed RF power to the showerhead and is thus

> configured to pulse an RF power to the grounded substrate holder."[1]

Thus, the outstanding Office Action apparently takes the position that, although no RF power is intentionally coupled to the substrate holder, the pulsing of RF power on the upper electrode will indirectly "pulse" this power onto the substrate holder. Applicants respectfully submit that this is improper.

First, Applicants submit that Chen et al. does not explicitly disclose that the grounded substrate holder has pulses of RF power thereon, which are received from the RF power provided on the upper electrode. In this regard, the Office Action does not provide support for the notion that RF pulses exist on the substrate holder.

Secondly, while claims may be given their broadest reasonable interpretation during prosecution, such interpretation must be consistent with the specification and with the interpretation that those skilled in the art would reach.[2] As discussed in the March 14 interview, the specification in this case makes clear that pulsing RF power to the substrate holder requires physical coupling of the RF power to the substrate holder. Thus, Figure 1 discloses a system wherein RF power source 50 is physically coupled to the substrate holder. There is no indication whatsoever in Applicants' specification that pulsing of RF power to the substrate holder means that the RF power is directly coupled to a different component, such as the upper electrode, and indirectly coupled to the substrate holder by electromagnetic radiation. One of ordinary skill in the art would not understand this meaning based on the pending claims and Applicants' specification.

Nevertheless, in order to expedite the prosecution of this case, Applicants have amended Claim 1 to recite that an oscillator is coupled to the substrate holder, the oscillator producing an RF signal. The outstanding Office Action acknowledges that Chen et al. does

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[1] See Office Action at page 2, lines 7-16.
[2] See M.P.E.P. § 2111 citing *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) and *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999).

not disclose this feature, but cites the secondary reference to Wiegand as teaching this feature. Wiegand discloses a radar jamming system using a digital radio frequency memory for storing and retrieving radio frequency signals. As discussed in the background section of Wiegand, radar jamming systems will typically return the exact RF signal received from the radar system in order to confuse the radar system. However, it is necessary to store the RF radar signal for a period of time in order to generate a false radar return at a later time. The digital memory of Wiegand provides an improved method and device for digitizing the RF signal such that it can be stored in a solid state memory, and later converting the digital signal back to an RF signal before returning to the radar. To do so, the system of Wiegand utilizes an RF local oscillator 60 for storage and regeneration of the RF signals.

However, there is nothing whatsoever in Wiegand to suggest that the RF local oscillator or any other RF generating component in Wiegand may be used to pulse RF power in a substrate processing system. Indeed, there is no indication that the RF components in Wiegand pulse RF power at all. Further, Wiegand is directed to solving a completely different problem than the system of Chen et al. Thus, as discussed in the March 14 interview, there is no motivation to combine the RF components of a digital radio frequency memory system of Wiegand with the semiconductor processing system and method of Chen et al. to arrive at the teaching of Applicants' claims. This is particularly true in view of the fact that Chen et al. does not disclose an RF oscillator coupled to the substrate holder as now required by Claim 1.

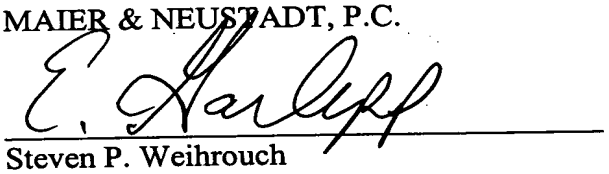
For the reasons discussed above, Applicants' independent Claims 1, 26 and 38 patentably define over the cited references. As the remaining pending claims in this case depend from Claims 1 or 26, these dependent claims also patentably define over the cited references. Nevertheless, Applicants note that dependent Claims 10-16 recite features to further distinguish over the cited references. Specifically, Claim 10 recites an amplifier

coupled to the oscillator, and Claims 11-16 recite further characteristics of the amplifier and/or the impedance match network and a waveform generator in relation to the amplifier. As discussed in Applicants' specification, use of the amplifier allows pulse generation at reduced pulse width.[3] Neither Chen et al. nor Wiegand disclose any of these features. Therefore Claims 10-16 provide a further basis for patentability over the cited references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Steven P. Weihrouch
Attorney of Record
Registration No. 32,829

Edwin D. Garlepp
Registration No. 45,330

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 03/06)
SPW:EDG\la
I:\ATTY\EDG\251323US-AM DUE 4-5-07.DOC

[3] Applicants specification at paragraph [0065].